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The Automobile

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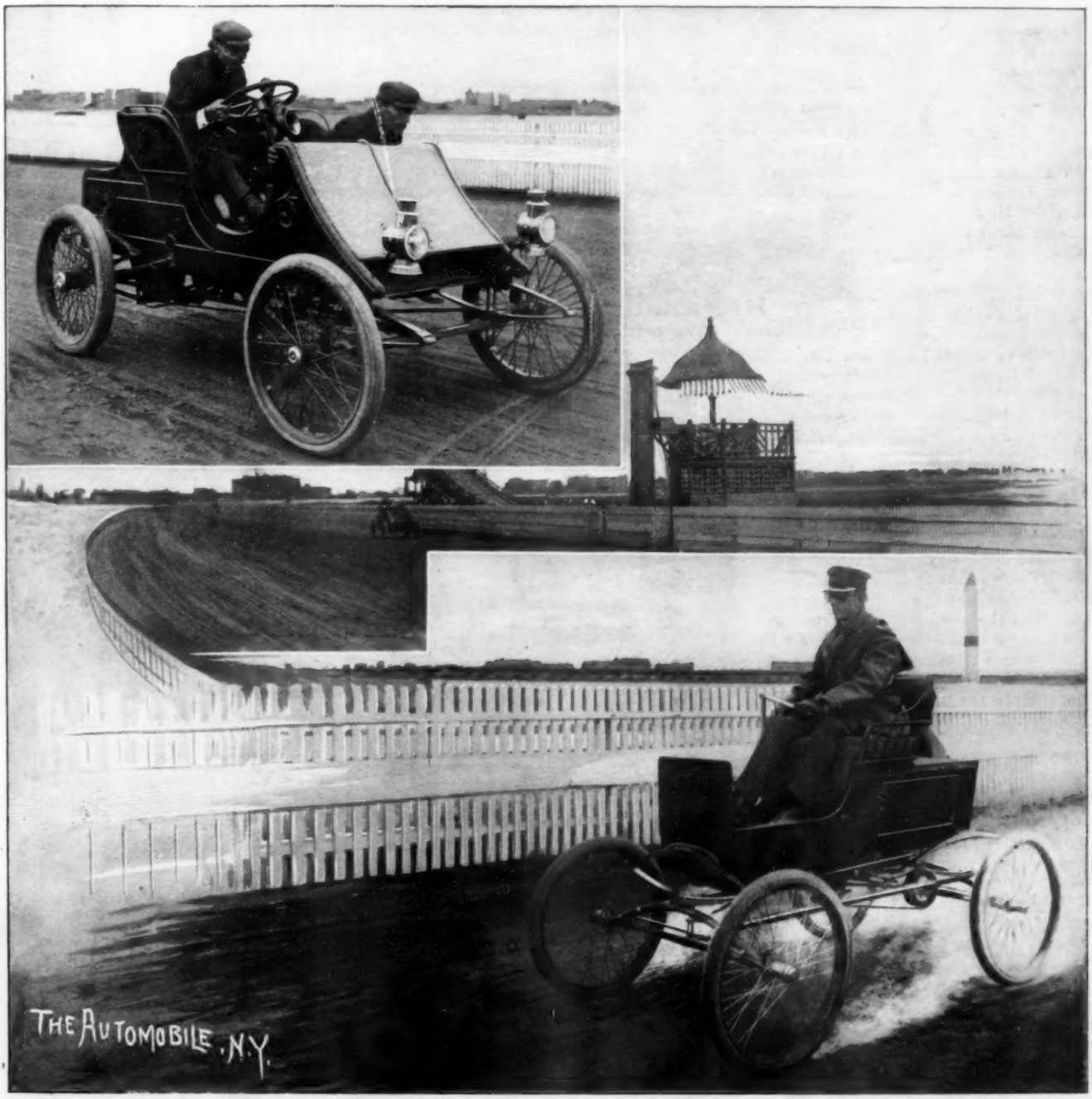


Mr. Alexander T. Winton in His Racer. Mr. T. E. Griffin in His Loco-Racer.

FLYERS AT THE CHICAGO EXHIBITION AND RACE MEET.

RECENT AUTOMOBILE EXHIBITIONS AND RACES

The Automobile Exhibition and Race Meet at Chicago.

The race meet, held from September 18th to 25th, at Washington Park, Chicago, under the auspices of the Inter Ocean, was very successful in point of contestants entered and records made. The management was most unsatisfactory, and, except on the first day, the spectators were kept guessing up to the eleventh hour as to what events would be run off. Very fast time was made by Alexander Winton on a special Winton racer, by T. E. Griffin on a locomobile racer, and by Kenneth Skinner and Albert Champion on tricycles fitted with De Dion and Aster motors. The "practical utility" tests, comprising tests for horse-power, draw bar pull, etc., were an important feature of the exhibition. They were made under the supervision of Leland L. Summers, Cleveland; Prof. John E. Sweet, Syracuse, N. Y.; Prof. Henry Crew, Northwestern University; H. M. Brinckerhoff, general manager Metropolitan West Side Elevated Railroad Co.; Prof. P. M. Chamberlain, Lewis Institute; Prof. C. V. Kerr, Armour Institute and R. H. Pierce. The data will be collected and published.

The program opened Tuesday with an automobile parade for manufacturers. In this the Hewitt-Lindstrom Motor Co. took the first prize, for the greatest number of practical designs, and also the second prize, awarded for the greatest number of vehicles in line. The third prize, for the most practical design, went to the Woods Motor Vehicle Co.

Next followed three one-mile free-for-all races with flying start, for steam, gasoline and electric vehicles, respectively. T. E. Griffin won the first, in 1:39; Arthur J. Eddy had a walkover for the second in 2:09, and the third was also a walkover for Chas. A. Lindstrom in 2:34. An obstacle race was then captured by Griffin and was followed by a parade for private owners. In the latter, J. W. Allison won first prize for the most elegant turnout and C. A. Lindstrom the second, for the machine carrying the greatest number of passengers. Lindstrom's vehicle carried thirty-three.

A free-for-all ten-mile race was then run, and won by Winton in 16:02 2-5, with Skinner a close second. Winton's best mile was reported to be 1:08. A five-mile motor tricycle race was captured by Skinner in 7:33½, with Champion second. The best mile was 1:06. An exhibition mile was made by T. E. Griffin, who drove a Locomobile racer, in the remarkable time of 1:06.

On Wednesday an all-day rain compelled a postponement of the track events. On Thursday, while waiting for the track events to begin, an exhibition was given by "Jack" Worth of the controllability of the machine built by the Chicago Motor Vehicle Co. A delivery wagon was first run back and forth, see-saw fashion, on a rocking platform. Then the platform was blocked level and the wheels run in various ways over a ten-inch block, being stopped in any position at will. An egg, placed on the platform just beyond the block, was cracked but not crushed when one of the rear wheels of the wagon was gently lowered upon it from the block. This feat is shown in our illustration. The wheel was then backed away clear of egg and block.

The first race was of one mile, between Dr. L. D. Shepard and H. C. Eisselstein, both of Chicago, in steam carriages. It was won by the former in slow time, 2:55½.

The mail race followed. This was made five miles long instead of ten, as at first intended. Each driver had to visit forty mail boxes, unlock them, register his name on cards therein, return the cards, and lock the boxes. There were three entries, a Siegel-Cooper delivery wagon, a Hewitt-Lindstrom electric, and a Woods electric. The last named broke down, and the race was won by the Siegel-Cooper wagon in 46 minutes.

The concluding feature was a fifteen mile tricycle race between Albert Champion, Kenneth Skinner and C. G. Wridgway. The finish was in the order named, the time being 24.27.

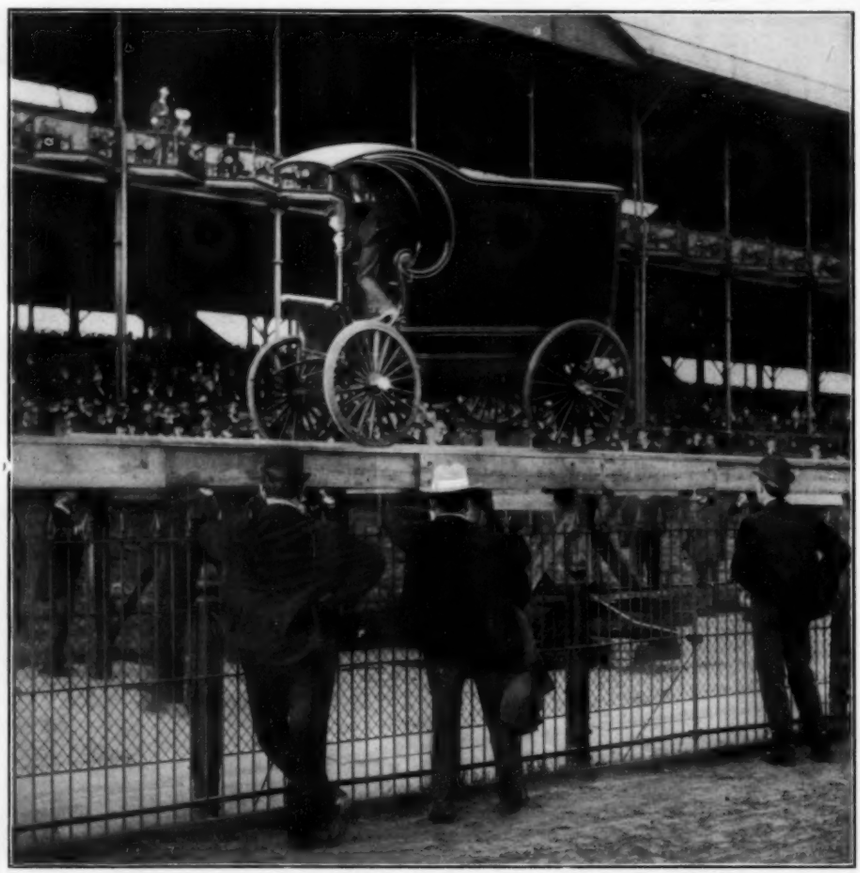
The first event Friday was a handicap race between Alexander T. Winton, in his racing machine, and Arthur J. Eddy, in a Winton road carriage. Mr. Winton covered twenty miles while his opponent was making thirteen. The time was 30:31 3-5, and the best mile was 1:34.

A ten-mile motor tricycle handicap, between Skinner, Champion and Wridgway, followed. The last named, with an allowance of one mile, won. Time, 15:19 1-5.

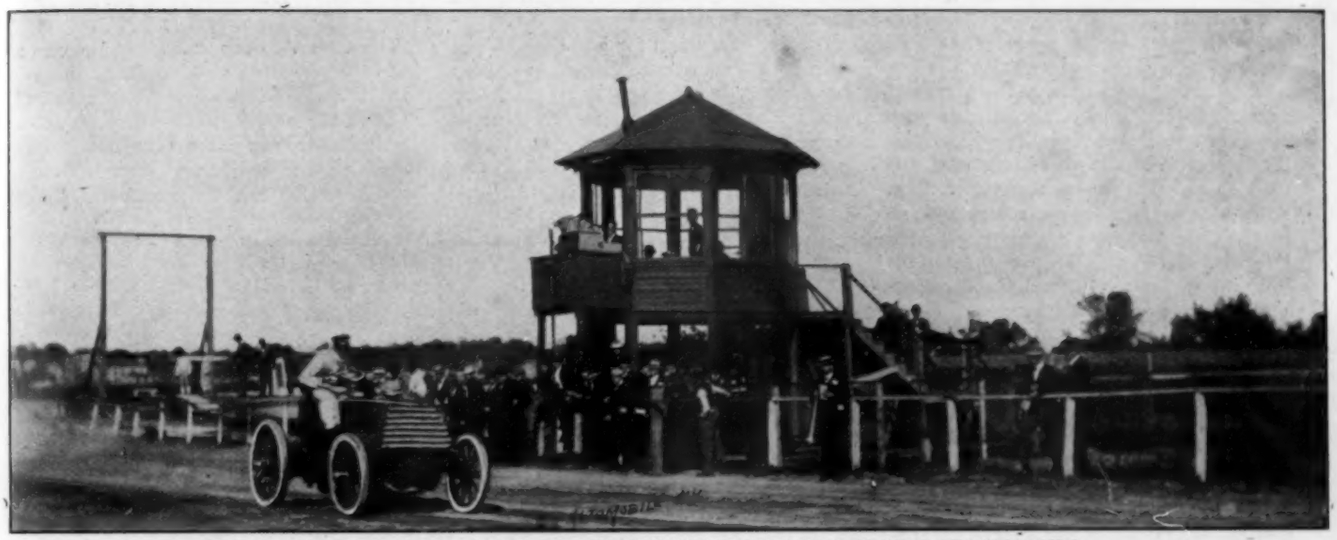
The one-mile backward race between steam carriages was won by T. E. Griffin in 2:56 3-5. Following this a five-mile road carriage race for members of the Chicago Automobile Club was won by J. W. Bate in 14:32 1-5, driving a steam carriage.

In the two-mile ladies' race the honors fell to Miss Jeanette Lindstrom, Mr. Lindstrom's thirteen-year-old daughter, driving a Hewitt-Lindstrom electric carriage. Time, 7:12. The other competitor was Miss M. A. Ryan, of Montreal.

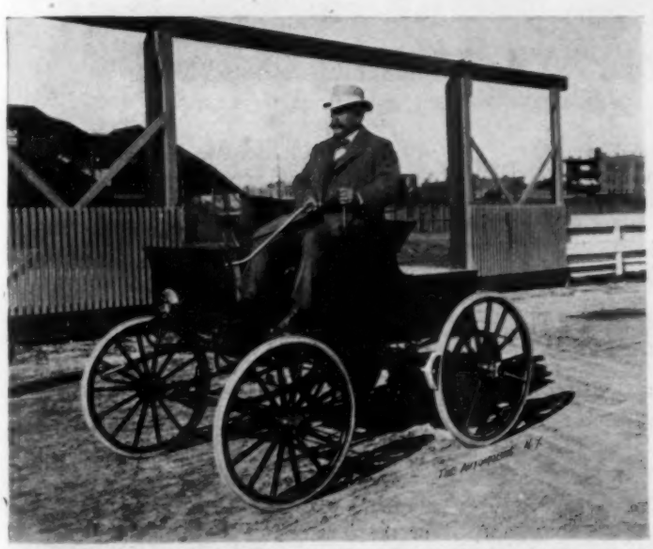
The feature of Saturday's contests was a fifty-mile sweepstakes for the $500 Inter Ocean challenge cup. No entries of steam or electric vehicles were made; and as



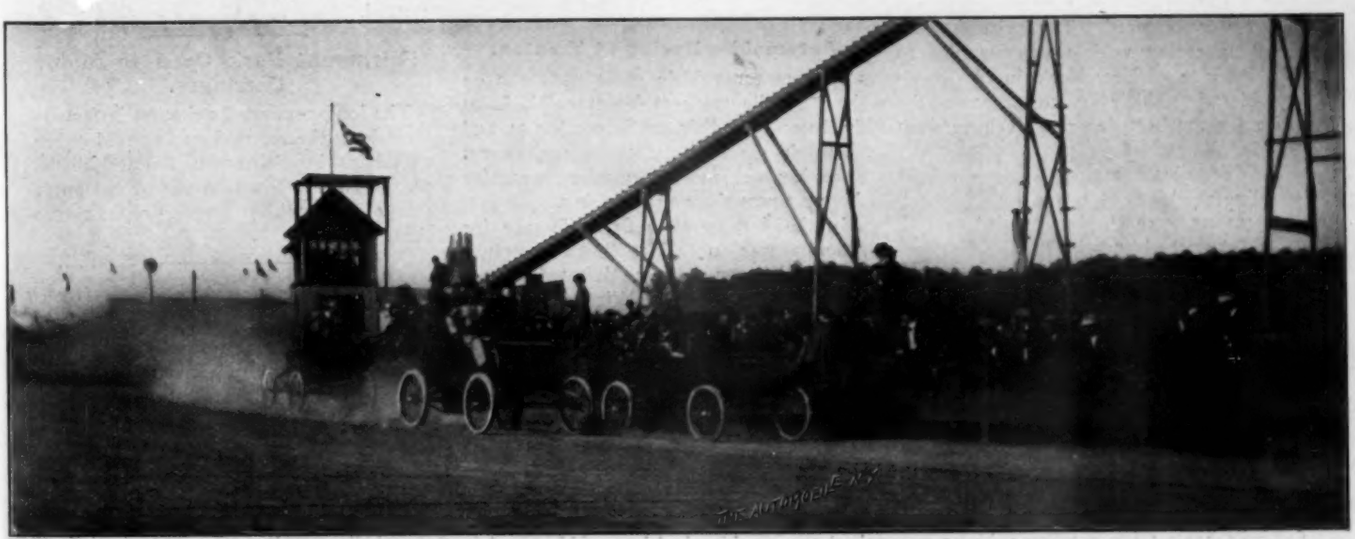
EXHIBITION OF CONTROL BY THE CHICAGO MOTOR VEHICLE CO.



AT THE GUTTENBURG RACES.—A. C. BOSTWICK WINNING THE TEN-MILE CHAMPIONSHIP.



MR. C. A. LINDSTROM IN HIS ELECTRIC MACHINE.—AT THE CHICAGO RACES.—MISS JEANETTE LINDSTROM.



AT THE TRENTON RACES.—S. T. DAVIS WINNING THE AUTOMOBILE CLUB RACE.

Winton objected to the admission of Skinner and Champion on their tricycles he was allowed to go over the course alone. He made the fifty miles in 1:17:50, or at a rate a little better than thirty-eight miles per hour. Later, however, the tricycle men succeeded in persuading the judges that they ought to be admitted to the race, and they started off in an exciting contest. After a tardy start, Skinner drew up and passed Champion, and gradually distanced him until his inlet valve clogged on the forty-second mile. Champion's time was 1:15:57 2-5.

The ten-mile manufacturers' race for steam vehicles was won by the Locomobile Company in 21:13. A similar race for gasoline vehicles was run by Winton against Skinner and Champion. The last named won in 14:21 1-5, a fifth of a second ahead of Skinner. Winton's time was 16:17 3-5. The "combination" race for the winners of the above two events was entered only by Champion and Skinner, and resulted in a walkover for the former, Skinner's motor giving out after the first mile.

On Monday and Tuesday a few postponed events were given. A grade-climbing contest was won by the Chicago Motor Vehicle Co., whose delivery wagon reached the 35 per cent. grade. The St. Louis Motor Carriage Co. was a close second. A trick driving contest resulted in victories for the same companies in the same order. T. E. Griffin attempted to lower his record of the previous Tuesday, but made only 1:31 3-5. A five-mile ladies' race was won by Miss Lindstrom in 12:41 3-5. Several other races for private owners and for tricycles were run, but without making records.

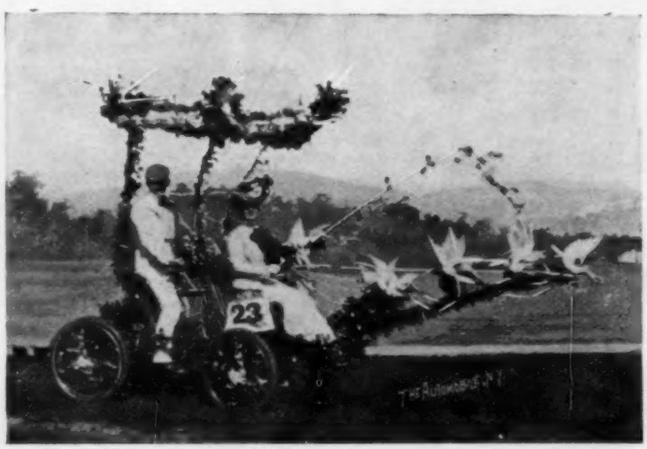
Automobile Racing at Guttenburg.

Tuesday, September 18, was devoted to motor vehicle races at the Tri-State Fair at Guttenburg, N. J. The opening event was a parade in which twenty-eight vehicles were entered. The prize for the finest appearing vehicle was awarded to Mr. Barwise, of New York, in an American Electric Vehicle Co. golf trap; and the prize for the best decorated vehicle went to Mr. Warendorf.

A five-mile race for American-built gasoline machines was won by T. Walsh in 10:10 4-5, with F. Nagel and Albert C. Bostwick second and third. The first two drove Automobile Co. of America machines and Bostwick his Winton special. A five-mile motor tricycle race resulted in first place for C. S. Henshaw in 8:24 3-5, with J. Louvegnez and S. R. Atkinson following in the order named. The first two rode De Dion machines and Atkinson an Orient.

A. L. Riker had a walkover in the ten-mile electric vehicle event, and qualified for the award by an exhibition mile. The five-mile contest for gasoline vehicles under 1000 lbs. brought out four De Dion machines, and was won by C. J. Field on a quad. Time, 11:43 3-5.

The five-mile event for gasoline vehicles over 1000 lbs. was contested by Albert Bostwick in his racing Panhard and D. Wolfe Bishop in his smaller machine of the same make. The former won easily in 7:43 1-5, leading Bishop by half a mile. This lowered W. K. Vanderbilt, Jr.'s New-



WINNER OF THE PRIZE FOR BEST DECORATION AT GUTTENBURG.

port time for the same distance by 1:10, but the latter rode on a half-mile track, while that at Guttenburg is a mile long. The five-mile race for steam vehicles was won by W. J. Stewart in 11:48, with W. L. Hibbard a hot second. All the contestants rode locomobiles.

A ten-mile championship, for the winners in the preceding events, was entered by Bostwick, Bishop, Riker and Stewart. Stewart broke his chain at the start, and Riker's motor was disabled at the end of the first mile. Bostwick won in 15:09 1-5, beating his only opponent by a hundred yards less than a mile.

A brake test and an obstacle test were won by C. R. Stockbridge in a locomobile, and Riker drove his electric machine an exhibition four miles in 7:00 3-5.

Automobile Racing at Trenton.

Five motor vehicle races were run on the half-mile track at Trenton, N. J., at the Inter-State Fair, on September 24, and although the contestants in each event were few, the races themselves were for the most part close and exciting.

In the first event, a five-mile race for gasoline machines, Mr. Bostwick, on a special Winton, easily defeated Percy Owen, who drove a Winton roadster. Time, 11:58 2-5. The five-mile race for steam carriages was won by S. T. Davis, Jr., in 11:24. All competitors drove locomobiles.

A pursuit race for tricycles was won easily by C. S. Henshaw on a De Dion. His only opponent was Bostwick, who rode his new two-cylinder Buchet machine of 9 horse-power. It was the first time the latter machine had been ridden, and it is expected to make fast time when "limbered up." Henshaw then gave a five-mile exhibition run in 8:29.

The ten-mile open championship was a hot race between Bostwick, Davis and W. H. Hall, until Bostwick in the seventh and Hall in the eighth mile became disabled. Davis's time was 20:20 1-5. The battle between Davis and Bostwick was renewed in a ten-mile race for members of the Automobile Club of America, and after a neck-and-neck struggle the former won by thirty yards. Time, 20:49.

The Chicago Automobile Club to Have an Exhibition.

The Chicago Automobile Club has determined to hold an exhibition and race meet in May or June of next year. The club believes that lack of time for preparation has been responsible for the somewhat qualified success of many racing events in the past, and they have announced their intention at this early day in order to give manufacturers ample time for the constructional and other preparatory work. The details of the proposed event will be published as soon as arranged.

Fairmount Park Open to Motor Carriages.

The long-continued agitation in favor of abolishing the restrictions imposed on automobiles in Fairmount Park, Philadelphia, has at last had its effect, and operators of automobiles may now use any of the Park drives.

Winton Awarded the Inter-Ocean Cup.

The cup offered by the Chicago Inter-Ocean for the fifty-mile championship was finally awarded to Alexander Winton, on the ground that the motor tricycles ridden by the other contestants were ineligible. Mr. Winton is reported as saying that he is willing that the cup shall remain a challenge cup, to be defended by him against any challenger driving a four-wheeled vehicle.

The Gasoline Vehicle Engine.*—IV.

By E. W. Roberts, M. E.

The vital point about the operation of a gas engine for any purpose is ignition of the charge, not only at every working stroke, but at the proper time in the stroke. To get the best effect of the explosion, it is necessary that the maximum pressure should occur just before the piston starts upon the expansion stroke, or at the end of the compression stroke. Should ignition take place too early, a disagreeable thump will be heard and the engine will lose in power, because the highest available pressure will not be obtained. Again, should ignition be too late, a loss of power will occur because the charge will not have time to expand the greatest possible degree, and otherwise available heat will pass off through the exhaust.

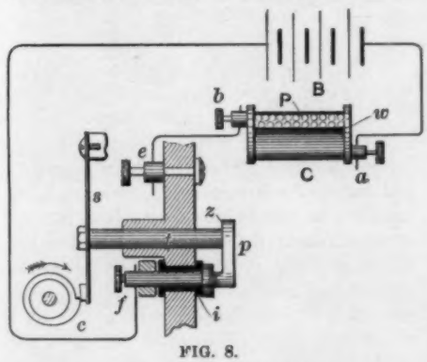


FIG. 8.

Four methods of igniting the charge have been used by gas engine makers. They are: Contact of the charge with a naked flame; contact with a heated metal surface; the flame of an electric arc; and raising the temperature by means of high compression. Of these, electric ignition is almost universally employed in engines used to drive automobiles, and is the only one that merits attention in this article.

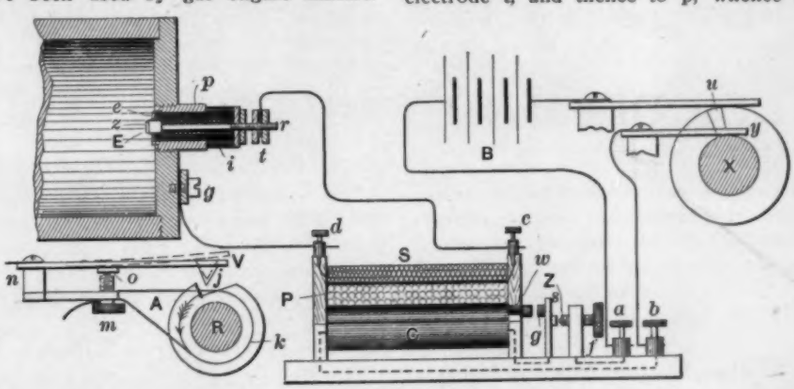


FIG. 9.

Two methods of securing an electric arc for this purpose are in vogue. One of these is that known as the make-and-break, and the other the jump-spark. The former is quite universally employed for engines operating at speeds of 800 revolutions per minute or less, and the other for engines operating at higher speeds. The introduction of the automobile was closely followed by the adoption of the jump-spark method of ignition because of the high rotative speeds that soon after came in vogue.

The diagram, Fig. 8, illustrates the principle of operation of the make-and-break method. The principle upon which the arc is formed is the rapid breaking of a low tension circuit in which there is connected what is known as an inductive resistance. The elements of the circuit are: a source of electrical energy B, a spark coil C, and a means of making a quick break in the circuit at z. The spark coil C is shown partially in section, and is made up of a core of small iron wires w, about which is wound a coil of insulated copper wire P through which the current flows. The principle only of the circuit breaker is shown, although the method illustrated has been used. The spring s carries a plunger t. The cam c upon the valve shaft depresses the spring, forcing the plunger hard against the insulated electrode, p. Just after the cam has passed the position shown in the figure, the spring is released and the plunger t flies back breaking the circuit at z with a rapid movement, and causing a spark to occur at the break. The spark at z must of course be inside the engine cylinder.

The path of the current is from the source of energy B to the terminal a of the coil C, thence through the coil to the terminal b, next to any convenient point e upon the engine. From there it passes through the iron of the engine to the electrode t, and thence to p, whence it is prevented from passing to the engine by the insulation. From the binding post f on p it returns to the source of energy B. Current flows through this circuit only when z is closed, unless there is a leak at some other point.

The jump-spark method is illustrated in Fig 9. The principle of the jump-spark method is the production of a high-tension current of sufficient intensity to arc or jump across a gap which remains open at all times. This is accomplished by the use of a Ruhmkorff coil C, which is constructed as follows: A coil of comparatively coarse wire P, known as the primary winding, is wound about a core of fine iron wire w. On the outside of P is wound another coil of very fine wire S, which is called the secondary winding. At each variation in pressure of a current flowing in P, a current is set up in S. The greater the variation of the pressure in P the greater the intensity of the current set up—induced—in S. It is readily seen that, without altering the direction of current flow in P, the greatest variation in pressure is produced by breaking the circuit connected to P.

The greater the ratio of the number of turns in S to the number of turns in P, the greater will be the ratio of the pressure in S to the pressure in P. For example, if there are ten times as many turns of wire in S as there are in P, there will be approximately ten volts pressure in S for each volt of pressure in P. If there are twenty times as many turns in S as in P, there will be approximately twenty volts in S for each volt in P.

It is usual to make a series of interruptions in the primary circuit in order to produce a stream of sparks at the arcing point z in the secondary circuit. Two styles of interrupter are in use, one of them being electrical and the other mechanical. An electrical interrupter is shown at the end of the coil C. The primary current passes from B through the tongue to the conducting strip u, the tongue y, and the terminal b of the primary coil. From b it goes through the primary winding to the vibrating spring s of the interrupter. From s, when the gap Z is closed it passes to the screw f and through the terminal a to the battery. When Z is closed, the core w is magnetized and attracts the armature g, opening the circuit at Z. The magnet then immediately loses its power and the spring s closes the circuit, causing the magnet to break it again. This interruption is continued as long as the switch way is closed, inducing a flow of current in the secondary S. An impulse is produced in S both at closure and at breaking of the gap Z, but the more powerful of the two is when the circuit is broken.

Another method of interrupting the primary circuit is shown by the sketch in the lower left hand corner of the figure. The cam k is attached to the valve shaft R. The arm A is mounted so as to rotate about R as a center but does not revolve with it, being stationary for one sparking point. The interrupter gap o is included in the primary circuit by the leads m and n. Except when the block j is opposite the notch in the cam, the spring V is held in tension as indicated by the dotted lines and the gap o is open. When the notch in the cam allows the spring to relax, it vibrates for a short interval causing a rapid series of interruptions at the gap o. Thus, it will be seen that this ingenious arrangement answers the double purpose of a switch and a vibrator.

The secondary winding is practically the source of energy for the secondary circuit. The path of the secondary current is from c to t, through the insulated rod r to E, across the gap z to the small

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platinum point e, which is riveted to the steel shell p of the plug, through the engine to g and thence to the terminal d of the secondary. Attaching a wire to the engine as at g is called grounding the circuit on the engine.

The ignition plug is insulated at i by some substance that will withstand both high temperatures and the high pressure of the secondary circuit. Porcelain, lava, glazed pottery, and mica have all been used. With the exception of mica, these insulators are open to the objection either that they will break readily or that they will absorb moisture and lose their insulating properties. Mica is a difficult material to make into the form necessary for a plug of this kind, but the writer is aware of at least one firm that is using this material with success for this purpose. Some manufacturers use a plug in which both terminals are insulated instead of having one grounded. It is claimed by them that the engine and the metal framework of the vehicle act as a condenser and the result of this action is a loss of current.

Instead of employing a vibrator, the single interruption produced by an ordinary switch is sometimes employed. The stronger spark produced at the breaking of the primary circuit is that which should be depended upon for igniting the charge. The consensus of opinion appears to be that this method is unreliable.

The rotation of the arm A about the shaft will change the lead of the spark and by this means the speed of the engine may be controlled. This point will be more fully discussed in a later number of this series.

Advantages of Liquid Fuel.

1. The combustion of liquid fuel is complete, whereas that of coal is not, consequently in the former case there is no lost heat in smoke or soot.

2. There are no ashes or clinkers, and consequently no fires to clean, with the accompanying loss of heat and drop in the steam pressure—the steam pressure and revolutions of the engines being maintained at one point throughout.

3. The boiler tubes are always free from soot, and are clean; therefore, always in the best condition for transmitting the heat from gases passing through them to the water from the boiler.

4. The temperature of the escaping gases may be considerably lower than is required to create the necessary draught for coal firing. With coal the air has to be drawn through the bars, and its fire in the furnaces; by natural draught this requires a temperature of the escaping gases of from 600° to 700° F. But in the case of liquid fuel there are no bars or thick fire for the air to force its way through, and the required amount of air can be drawn through furnaces by a much lower uptake temperature—about 400° to 450° F. being in most cases sufficient.

5. The admission of air to the furnace being under complete control, and the fuel being burnt in fine particles in close contact with the oxygen of the air, only a very small excess of air above that actually necessary for the complete combustion of the fuel is required. With coal, in order to ensure as complete combustion as possible, a very large excess of air is required.

In addition to its higher calorific value, liquid fuel has many other advantages, especially on board ship.

Stowage.—A ton of coal will occupy about 45 cubic feet of bunker space, and a ton of oil will require about 40 to 45 cubic feet. Assuming that both coal and oil will require the same bunker space per ton, then, since one ton of oil fuel is equal to two tons of coal, the bunker space necessary to steam the same distance at the same speed is only one-half.—The Automotor Pocket-Book.

During the permanent automobile exhibition to be opened in Berlin next July, it has been proposed to utilize the phonograph in a manner which, while not entirely new, has never been tried on a commercial scale. As it would entail considerable expense to the exhibitors to have an attendant constantly at the exposition in order to give the public the necessary information in regard to their products, the directors intend to furnish each exhibitor a phonograph and cylinder on which is inscribed a complete description of the goods exhibited. Should a visitor desire to obtain this information he will make application to an employee designated for this purpose, who will start the phonograph and stop it as frequently as the visitor desires. Doubt has been expressed as to whether the employee spoken of will be kept very busy satisfying the curiosity of the visiting public.

NEW STYLES OF AUTOMOBILES

The Strong & Rogers Spider Stanhope.

One of the latest designs in electric carriages is the Spider Stanhope brought out by Strong & Rogers, Cleveland, O., and shown in Fig. 1. It was exhibited at the recent Inter-Ocean Show in Chicago, where it attracted much attention on account of its graceful lines of construction. The number of cells used is 40, which is claimed is ample for a run of 40 miles on one charge. It has a speed of from three to 16 miles and is equipped with a 2½ horse-power motor. The body and Victoria top were especially designed. The wheels are of wood, the front being 32 in., the rear 36 in., and have solid rubber tires.

Woods Electric Landau.

A landau is one of the latest additions to the line of carrages bult by the Woods Motor Vehicle Co., of Chicago. It seats four people, and is for use in both summer and winter. The regular No. 3 Woods equipment is used, and the carriage is stated to run twenty miles on one charge of its batteries. It is intended to meet the requirements both of the private owner and of the electric carriage companies. This vehicle was exhibited for the first time at the Inter-Ocean show in Chicago.

The National Automobile and Electric Company's "New York" Trap.

The National Automobile and Electric Co., Indianapolis, Ind., are makers of the dos-a-dos trap shown in the engraving. It has a 2½-horse-power motor, geared directly to the wheel hubs, and with the differential in the motor shaft. There are five forward and three backward speeds. The company intends building several other styles of electric vehicles.

The Buffalo Electric Stanhope.

The Buffalo Electric Carriage Co., Buffalo, N. Y., say of their product that it is "an electric carriage built by carriage builders on carriage lines of construction, but strengthened at all points to meet the requirements of electric propulsion, no tubing being used." It has wood wheels, solid tires, wood reaches, and ball bearings. The controller gives three forward speeds and one reverse. The battery has a capacity of fifty miles on one charging.

The Kensington Steam Runabout.

The Kensington Automobile Co., Buffalo, N. Y., who manufacture several styles of electric carriages, are building also the steam carriage shown in our illustration. It is on the usual lines as to form, and has a four horse-power double cylinder engine, and upright tubular boiler. Its weight is 755 lbs.

The Winton Gasoline Delivery Wagon.

In Fig. 6 is shown the latest type of gasoline delivery wagon made by the Winton Motor Carriage Co., Cleveland, O. The motor employed is of the company's standard make, but is geared lower, thus developing a greater hauling and hill climbing power. It is intended to run about 15 miles an hour and carry a load of 600 to 800 pounds over ordinary roads.

FIG. 1.—STRONG & ROGERS' SPIDER STANHOPE.

FIG. 2.—WOODS' ELECTRIC LANDAU.

FIG. 3.—NATIONAL'S "NEW YORK" TRAP.

FIG. 4.—KENSINGTON STEAM RUNABOUT.

FIG. 5.—BUFFALO ELECTRIC STANHOPE.

FIG. 6.—WINTON DELIVERY WAGON.

NEW STYLES OF AUTOMOBILES.

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The Road Rights of the Automobile.

The decision of Judge Sutherland in the now historic West case, to the effect that the automobile cannot be barred from the highways because it is new and frightens horses who see it for the first time, is now fitly seconded by the decision of a jury. While such accidents as the one recorded on another page are sad and deplorable, still it is right to remember that not all horses, but only certain timid, or badly-trained ones, are liable to bolt or do bolt, even on first seeing an automobile. Horses of this description are liable to bolt at fifty other things, and their owners are or ought to be fully aware of their disposition. If any new means of travel, be it railroad train, trolley car, or motor carriage, is a marked improvement on what has gone before, it is simple folly to try to prevent its adoption simply because horses are afraid of it; and the attempt to do so is apt to have a very selfish origin.

And while the automobile as a conveyance is entitled to equal rights with the horse, and though this fact should be insisted on whenever necessary, no palliation can be found in law or in morals for such handling of these machines as recklessly imperils, or even wantonly annoys, other users of the common highway. It is a pity that comments on this subject should ever be necessary, but nothing is more certain than that in many cases the law-abiding majority of automobilists are made to suffer for the offenses of a few. It is always possible to punish the transgressors, if no objection be had to making the innocent suffer with them; but what is needed is an effective sentiment among automobilists themselves. When the abuser of road privileges is made to feel that he offends not only the public, whom he may hold in contempt, but his own fraternity as well, there will be much less difficulty than now in securing recognition of the automobile's rights.

Exhibitions Good and Bad.

The automobile exhibit and race meet held last month at Chicago under the auspices of the Inter-Ocean, may be considered successful so far as regards the attracting of a large number of prospective buyers. To the Inter-Ocean, however, it was anything but a paying investment. It had set itself a task wholly beyond its power to carry out; the track events in particular failed to come up to expectation; and, what with this and the unfavorable weather of two or three days, the attendance of the public at large was disappointingly small. As was natural, the Chicago press had not warmed to the enterprise, and it received no local support except what was paid for in the way of advertising.

Even apart from the lack of management, the very moderate success of the affair served to emphasize pointedly the importance of having such exhibitions under the patronage of other than private or individual interests. The proper parties for the work are the automobile clubs, not the newspapers, and newspaper shows can be justified only when the clubs hesitate to undertake the work.

We are glad to note that the Chicago Automobile Club has announced its determination to organize a show, to be held in May or June of next year. One exhibition each year in the West, and another at a different date in the East, will probably be enough for the present growth of the industry, and the Chicago club, composed of men whose standing place is above the suspicion of seeking personal profit, has rendered a public service by taking up the matter. We extend our best wishes for its success.

When a Race is Not a Race.

THE AUTOMOBILE is not a custodian of the racing interests of motordom, but it is nevertheless at one with its readers and the public in thinking that, if races are to be held, they should be races in fact and not farces. Still less should they be empty fizzles, fore-doomed to collapse by lack of management and the indifference of contestants. Nevertheless, out of six recent race meets, large and small, which we call to mind, three may fairly be described as failures. In one, too hasty preparation, unfavorable weather and the non-appearance of most of the contestants, were together responsible for the fiasco. In another, a modest affair of two races, organized to help a New England agricultural show, the second race was declared off owing to the failure of three of the five entries to appear. The promoters of the third, and by far the largest event, in the picturesque language of the West, bit off so much more than they could chew that they had the greatest difficulty in managing even a portion of the morsel gracefully.

It is possibly no one's business, but the promoters' and their victims', whether the drawing card be a motor vehicle race or a ten-round set-to between the ex-champion and the would-be champion of heavyweights. Until the novelty of the thing has worn off, probably the former attraction will be the most sought after. But if motor track racing is not to fall into contempt there will have to be some means found to compel the contestants entered to appear at the tape and put up a race. There are too many "races" won by default in exhibition runs, and a spectacle of this sort, though it may entertain the scoffer, is not edifying.

We fancy the truth of the matter is often that the delinquent vehicles are not in running order, and that if dragged out on the track they would present a spec-

tacle of quite negative value to their owners. If this is the case, however, the remedy should be found in some sufficient spur towards keeping the machines in order when a race is to be run. The entrance forfeit should be high enough to make it cheaper to ensure a perfect machine than to take chances on a bad one. If a vehicle is liable to break down from one race to the next, it should not be too easy to class it with one that will work reliably whenever called upon.

A little strictness in this matter will aid effectively in putting the high-speed machine on a business basis.

The Automobile Not a Nuisance.

The rights of the motor vehicle on the road were recently again the subject of a legal contest. Dr. William L. Vroom, of Ridgewood, N. J., was sued for damages by the husband of a woman whose horse ran away on meeting the doctor's automobile. The woman was fatally injured, and the point at issue was whether the horse or the machine was to blame for the disaster. In charging the jury, the judge said:

"The first question to which you come for the purpose of deciding the defendant's responsibility is whether this machine was a nuisance. You have seen how it was operated. You have heard the witness describe the mode of operation, and the question rests with your sound judgment as to whether the machine, driving along the country roads without a horse in front and discharging steam behind, it likely to frighten a horse on the highway, and thus endanger the road as to constitute the machine a nuisance. It is agreed that it is an improved method of locomotion, but it does not follow from that that it is to be tolerated. The right to drive horses along the highway is an established right, a common right, and if a modern method of locomotion is used of such a nature that it commonly brings discomfort and danger to those exercising the common right, the established right of travel on the highway, then it is a nuisance and cannot be tolerated. If it occasionally or exceptionally frightens horses that would not make it a nuisance. In order to make it a nuisance its common effect must substantially interfere with the people who drive horses along the highway."

The doctor had given an exhibition of control over his vehicle before the jury, and the latter had no difficulty in deciding that the automobile was not a nuisance.

The horse must leave the city. Not that the world has anything against the noble animal, but soon he will be no longer needed in congested centres, and it is gratifying to know that he will take his unhealthful stable with him. The automobile is so much cleaner, so much more economical, takes up so much less room, and is withal so much more expeditious that we shall soon discard the horse just as we have set to one side the spinning wheel, the flint and tinder and the brass knocker. The horse has been one of man's best servants. Peace to his declining days! May his retired life on the farm and field be less of cruelty and hard work.

The Automobile for Military Purposes.

It seems almost like a disturbing element, entirely out of accord with the peaceful and pleasurable uses of the automobile recorded in these pages, to refer, even briefly, to the military use of the self-propelled vehicle. It is nevertheless a fact which cannot escape notice and promises to be of vital importance to the industry, that military authorities here, and especially on the Continent, are evincing a lively interest in the question of war automobiles. In this connection it is of interest to note an opinion as to the advantages and disadvantages of various motive powers expressed by a writer in our English contemporary, "The Autocar." He claims that the only motive power suitable for military purposes is steam; that oil motors are too complicated, and that the supply of petroleum cannot be reckoned upon in war time. Electric cars, says this same writer, may be available for war purposes in twenty years' time, when every village has an electric installation—which, we may add, is not far from the truth in the United States. He states further that the ugliness and uncleanliness of a steam vehicle and the extra labor of stoking are not material from the soldier's point of view. But the steam car must be so constructed as to burn any kind of fuel. Many tests of these different types of war automobiles have been made in England, and the conclusion seems to have been reached that it is not the army which is not ready for the motor, but the motor which is not ready for the army. Another class of vehicle which is advocated is a traveling kitchen capable of cooking 2 cwt. of meat while running. This vehicle would not be required to go off the road. In this connection it is of interest to note that the French Government has ten military cars exhibited in the Palais des Armees at the Paris Exposition, which cover every possible service which the automobile may render in war time. We also find the French Minister of War ordering eight lorries, four propelled by petrol motors and four by steam, which are to be tested in the coming manoeuvres. A petrol motor will be placed at the disposal of each general, and several motor cycles will be used for carrying dispatches.

The Russian Government, also, has sent an invitation to the automobile builders, asking them to submit one petrol and one steam wagon, and the government has promised to place considerable orders for the type which it will decide to adopt. All of this proves that the war automobile will play an important part in future military operations, and deserves the earnest consideration of the manufacturers.

Climbing Pike's Peak in a Steam Carriage.

John Brisben Walker recently drove a "Mobile" steam carriage up Pike's Peak to the timber line, at an altitude of 11,000 feet above sea level. The stage road, which had been abandoned since the building of the rack railroad, was so washed out as to be nearly impassable, and when the timber line was reached it was impracticable to continue the ascent further. The trip back was exciting. "We simply flew," said Mr. Walker in an interview, "going around curves with a dash, and sometimes sliding dangerously near to the edge of the road. But we got back to Manitou without an accident of any kind." Mr. Walker's son Justus rode with him.

The Race from Berlin to Aix-la-Chapelle.

The racing event of the year in Germany was the race from Berlin to Aix-la-Chapelle, August 30 to Sept. 2. The whole distance was 428 miles, and it was run in four stages. The entries included motocycles, voiturettes, voitures, and racing machines, and there were thirty-one starters. It rained heavily on the third day of the race, but despite the rain and the mud sixteen machines finished the race. The leaders were Gleize, on a tricycle, and Kreitler, in a Pengeot racer. The former won in 14:46:22 net, with Kreitler next, in 16:59:24. Among the voiturettes the best time was made by Dupont in 23:28:19, and Kirchheim in 18:18:08, led the voitures.

A Severe Test.

At the instance of the Austrian Minister of War, a Bollee vehicle, intended for use in the Austrian army, recently made a "forced march" over the route from Vienna to Przemysl, in Galicia. The mountain ranges of the Tatra and the Carpathians were twice crossed, and very steep grades were encountered. In one ascent of 5,000 feet, there was a difference in altitude, between the top and bottom, of 830 feet, corresponding to a 16 per cent. grade. On the descent the slope was as much as 19 per cent. The trip occupied thirty-two hours, and was made without any delay except to repair a tire. The weight of the vehicle, in running order and with three passengers, was 3,520 lbs. The roads traversed were good in Hungary, but very poor in Galicia. The result was highly satisfactory to those appointed by the Minister of War to observe the test.

A Philadelphia automobilist, Captain Gans, lately hit on an ingeniously simple method of accustoming his horses to the presence of his motor carriage in the stable. The invention consisted in making the equines eat their oats from the machine, and Captain Gans reports it as an entire success.

Hints on Steam Vehicle Management.—II.

By George T. Hanchett.

It is always advisable to heat the storage tank in the vehicle by some means, either by passing the exhaust of the engine through a coil of pipe contained in the storage tank, or even arranging that the storage tank be heated to a mild temperature, possibly 150° F. by means of a small flame, if its construction will permit such usage. The reason for this is found in the fact that almost 90 per cent of the foreign materials in water are deposited under slight heating such as this, and can be much better handled in the form of a soft sludge in the bottom of the storage tank than in the form of scale on the inaccessible interior of the boiler.

A few drops of kerosene oil mixed with the feed water will prevent scale from attaching itself to the shell of the boiler, but this must be used cautiously. Heavy oil in its way is almost as bad as scale for a boiler. If the exhaust of the engine contains oil, it should by no means be used and condensed for boiler feed water. An oil that is at all heavy bakes on the shell in a whitish scum which is often very thick and tough, and effectively keeps the water away from the tubes and allows the flame to burn them out.

On the return from a trip the boiler should be blown off and thoroughly flushed out with clean water. It ought to be provided with caps on which sections of hose can be screwed and the water thereby forced through under pressure. This is most important to the life of a boiler. It often happens that the scale bearing impurities do not bake on the shells at once, finding it hard to get lodgment when the contents of the boiler are in motion, but after the fire has been drawn they settle down in a sludge on the bottom of the shell and in the course of the gradual heating which obtains when the steam is again gotten up, they get their grip and are baked fast by the fiercer heat that follows:

If the following rules are religiously observed, it is not at all probable that the automobilist will have much trouble with scale:

1. Use only brook or rain water.
2. Heat the water in the storage tank before feeding it to the boiler.
3. Place about one-half teaspoon of kerosene oil in the boiler before starting.
4. Blow the boiler off and flush it out thoroughly at the close of the run.

Another evil which will soon ruin a boiler is corrosion. Some materials in water, and it may be added for the sake of precaution, some alleged boiler compounds, attack the shell of the boiler and seriously injure it by eating it away. Of these, the most serious is moist air, which gets in its work at such times when the vehicle is out of commission. There are two ways in which the boiler can be safely left at such time—one is to thoroughly empty it and dry it out by a slight heat and seal it tightly. If thoroughly done this will clear the interior of the shell of moist air, but owing to the fact that it is often not carefully done, it is perhaps better to leave the boiler completely full of boiled water. Fresh water containing air will oxidize the boiler almost as quickly as moist air. The boiler should be sealed to prevent evaporation.

In speaking of try-cock gauges, the writer mentioned the fact that there were three, and that one was a high water mark. The effect of allowing the water to rise over this mark is to endanger the engine, for water is likely to pass over with the steam and enter the cylinders. It so happens that in the operation of a steam engine there is a time when the piston is driving upward, that all ports are closed and whatever is in the cylinder must be compressed to a certain volume before a port opens again. If this material be water, compression is as out of the question and has the same effect as if a solid block of steel were placed in the cylinder. Something must give way. Sometimes it is the piston rod, sometimes the piston itself, more often the valve gear, and quite frequently the cylinder head. Sometimes it simply stops the vehicle with a racking jerk, but in any event it is to be avoided.

There should be provided on either end of the cylinders little vent cocks which will allow any water passing over from the boiler to escape. Water in the cylinder produces a clicking sound, which once heard will never be forgotten, and the moment that the sound is in evidence the cylinder cocks should be opened promptly and the water level blown down to the middle line, where it should always be kept.

Petrol.

This liquid is one of the products obtained from the distillation of petroleum, and forms one of the naphtha series of hydrocarbons. Petrol, known also as "Light Oil," "Mineral Spirit," "Moto-car Spirit," "Moto-Essence," "Petroline," "Moto-Naphtha," is an exceedingly volatile and inflammable liquid, hence it readily evaporates, and an explosive mixture of air and petrol vapor is easily formed. It forms a clean, compact and very efficient source of energy for internal combustion motors. The principal varieties of petrol are:

	Sp. gr.
Gasoline	0.650
Moto-car spirit	0.680
Benzoline	0.700
Benzine	0.730

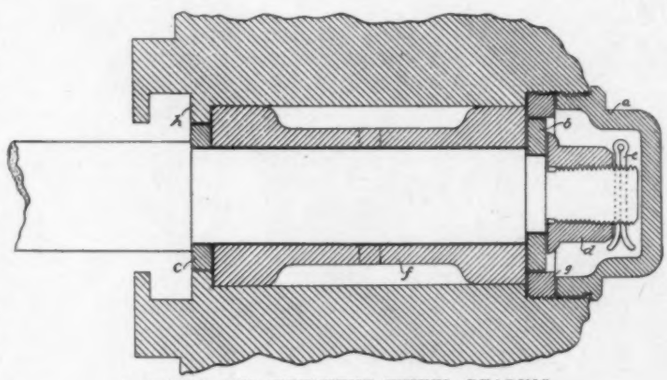
A Simple and Efficient Wheel Bearing.

By James E. Martin.

The question of automobile wheel bearings in one which the writer has no doubt is of the greatest interest to all automobilists.

Having had some experience with both the roller ball and the phosphor bronze bearings, the writer has learned to favor the latter, both for economy and general utility. With the roller bearing the resistence is very slight, and when new gives very good results, but just as soon as a little dirt or grit gets into the bearing it seems to go all to pieces. This the writer knows to be true from personal experience with vehicles weighing from 3,500 to 4,300 pounds.

For light vehicles the ball bearings will give good satisfaction, but they would look rather clumsy on hubs of wooden wheels of vehicles such as the ones mentioned above. They would require large balls, cones and cups in order to withstand the 50,000 lbs. resistence of a heavy brougham



A SIMPLE AND EFFICIENT WHEEL BEARING.

striking a solid object when traveling at a speed of from ten to twelve miles per hour.

Another point in favor of the phosphor bronze bearing, and one which affects buyer as well as builder, is its low cost. One set (four) of either ball or roller bearings for vehicles as above mentioned would cost from $80.00 to $160.00. For the benefit of the readers of THE AUTOMOBILE the writer submits a drawing of a complete bearing drawn to scale suitable for a two-ton vehicle.

The dust cap a is made of brass, and has twelve threads to the inch. The washers b and c are for the purpose of receiving the end thrust, c being made of forged steel and 3-1,000 of an inch smaller than the shaft, which is 1¾ inches in diameter, onto which it is shrunk; b is held on by the nut d and the cotter pin e. The bearing f is made of phosphor bronze and weighs about 10 lbs. It is made 1-32-inch shorter than the distance between the collars b and c. Its bore is 3-1,000 of an inch larger than the diameter of the axle. The outer diameter is made the same as the interior bore of the hub, so that the bearing is driven in by means of a hammer and a round

piece of wood, after which the lock ring g is screwed into place, holding the bearing firmly against the shoulder h. The lock ring g is made of phosphor bronze and is screwed into place by a specially shaped piece of steel which fits into holes in the ring's outer surface. The patterns for such a bearing should be made of good hard wood large enough to allow for the shrinkage of phosphor bronze, which is about the same as that for brass, ¼ inch to the foot.

The cost of a bearing as described would be:

Phosphor bronze castings, 10 lbs. at 23 cts. per lb.	$2.30
Boring on screw machine, ½ hour.	.12½
Turning outside and ends on lathe, 1 hour.	.25
Drilling oil holes, ½ hour.	.12½
Other machine work, 1 hour.	.25
Total	$3.05

For one set of four bearings, $12.20.

The writer was one of a party which made a test of a bearing such as is described above fitted on a brougham weighing 4,300 lbs., traveling over the streets of New York City. After traversing 4,700 miles the bearing was put on the mandrel on which it was originally turned and a wear of less than 1-1,000 of an inch was found.

Notes.

While the Forth Volunteer Infantry Brigade was encamped at Lochote, Scotland, an automobile was employed to carry the mails from the camp to the railway station. This greatly facilitated matters, and again demonstrates the enterprising spirit of the Scotchmen.

The use of the automobile for stag hunting has become quite the thing in Great Britain, and will come largely to the front in the transport arrangements. A party of automobilists will make a journey from London to Dulverton this month, and in the party, which will be assembled at the latter place, will be Sir Walter Besant, Mr. Rudyard Kipling, and Mr. Conan Doyle.

Writing to La France Automobile from Cannstatt, Mr. Paul Meyan reports that the Daimler Motorwagon Gesellshaft has determined to adopt magnalium in the construction of both motors and vehicle frames. The composition of this alloy is as follows: magnesium 25 per cent. and aluminum 75 per cent. Its specific gravity is slightly less than that of pure aluminum. Its tensile strength is a little more than 5,000 pounds per inch. It is readily cast and can be machined without difficulty. In general physical characteristics it resembles hard bronze. Mr. Meyan claims that it can be brazed in solid, and also punched and stamped in the sheet form. The company has decided to build the motor almost wholly of magnalium, and it is claimed that a 16-H. P. vehicle will weigh less than 2,000 pounds.

Club News and Views.

Club Directory.

Automobile Club of America, Homer W. Hedge, Secy., 120 Broadway, New York; representative to Paris Congress, A. C. Bostwick; representative on International Racing Board, Clarence Grey Dinsmore; substitute, John H. Flagler.

Automobile Club of Baltimore, W. W. Donaldson, Secy., 872 Park Ave., Baltimore.

Chicago Automobile Club, Chas. T. Jeffery, Secy., Chicago, Ill.

Automobile Club of Columbus, C. M. Chittenden, Secy., Broad St., Columbus, O.

Automobile Club of Rochester, Fredk. Sager, Secy., 66 East Ave., Rochester, N. Y.

Buffalo Automobile Club, Geo. S. Metcalf, Secy., Buffalo, N. Y.

Cleveland Automobile Club, L. H. Rogers, Secy., Cleveland, O.

Columbia College Automobile Club, Lewis Iselin, Secy., Col. College, New York.

North Jersey Automobile Club, E. T. Bell, Jr., Secy., Paterson, N. J.

Philadelphia Automobile Club, Frank C. Lewin, Secy., Hotel Flanders, Phila., Pa.

Pennsylvania Automobile Club, Henry J. Johnson, Secy., Philadelphia, Pa.

San Francisco Automobile Club, B. L. Ryder, Secy., San Francisco, Cal.

Worcester Automobile Club, Harry F. Knight, Secy. and Treas., Worcester, Mass.

The Essex County Automobile Club.

Another club has been organized in New Jersey under the above name, and at a meeting on Sept. 12, the following officers were elected: President, Kirk Brown, Montclair; vice-president, W. J. Stewart, Newark; secretary, Dr. H. Power, Upper Montclair; treasurer, H. W. Whipple, East Orange.

The club intends to concern itself with the defence of its members from malicious persecution, and invites the automobilists of Essex and neighboring counties, who wish to join it, to communicate with the secretary.

A movement is on foot to organize an automobile club in Pittsburg, Pa.

James McNaughton, a motor carriage owner of Pittsfield, Mass., is organizing an automobile club in that city.

The Board of Managers of the Century Wheelmen, of Philadelphia, has decided to admit automobilists to membership, and a storage room will be added to the clubhouse which will accommodate at least twenty machines.

The Cleveland Automobile Club held a run on Saturday, Sept. 8. On account of the threatening weather only eight members participated. Alexander Winton, who was of the party, led the run to Willoughby. From there the route was to Mentor, with return by the Ridge road.

The Endurance Test.

The 600-mile endurance test, proposed in connection with the Automobile Club of America's exhibition at Madison Square Garden, will undoubtedly be the most important and the most valuable road test to which motor carriages have yet been subjected in this country. It will be more useful than a race, and it will interest instead of antagonize the public. We hope there will be a representative list of starters, and a creditable list at the finish.

The Coming Automobile Week at Nice.

A very interesting programme has been prepared for the automobile festival to be held next March at Nice under the auspices of the Automobile Club at Nice and the patronage of the Automobile Club of France, and with the co-operation of the Citizens' Committee of Nice, the Mediterranean Club and the Society of the Monace Baths. On Sunday, March 24, 1901, at 2 p. m., there will be an automobile floral parade; on March 25, a speed race of a 450-550 km. course on a single charge of fuel supply from Nice to Avignon; also a Tourists' Race for cash prizes amounting to 10,000 francs, as well as medals and objects of art. On March 26 all winning automobiles will be exhibited. On March 27 the exposition will be continued and in the evening a banquet will be given by the Automobile Club of Nice in honor of the winners and visiting automobilists. On March 28 a mileage race will be run over the cement pavement on the Promenade des Anglais. The prizes will consist of medals and objects of art; only those who took part in the speed trials can compete in this race. On March 29 the annual race between Nice and La Turbie will be held, and can only be participated in by those who took part in the races on the day previous. The prizes consist of objects of art and medals. In the afternoon there will be a grand parade to Monte Carlo, and the handsomest automobiles will receive objects of art as prizes.

The vehicles may now be entered at the office of the secretary of the Automobile Club of Nice. All applications must be accompanied by the entrance fee. Registration closes on March 20, 1901, at noon. All races will be run in accordance with the rules of the Automobile Club of France. Definite instructions and the exact itinerary will be published later.

Correspondence.

Space will be given on this page to letters concerning the Automobile, its operation or construction, to accounts of tours or runs, routes of travel, good roads, etc. When requested by correspondents their names will not be published, but must always be given in the communication to the Editor.

Concerning Gasoline Engines.

Editor AUTOMOBILE:—In the third of the valuable series of articles on "the Gasoline Vehicle Engine," by Mr. Roberts, he notes the advantages and disadvantages of the carbureter and vaporizer systems. I want to ask if it would not be possible and practicable to apply both systems to a three h. p. engine in a 20-foot launch, using whichever system was required by the condition of the weather or the freshness of the supply of gasoline in the tank? With proper valves, it would seem that either system could be cut off.

Also, would it be safe and practicable in such a launch, using the carbureter system, to conduct the hot water from the engine forward to the bow and into a flat receptacle placed close to or under the gasoline tank, to be used in cold weather, or when the more volatile portion of the gasoline had been used up? This flow of hot water could be cut off by a stop cock when not required. Would not the wastefulness of fuel by the carbureter system be overcome to some extent by such a plan? And would there be any danger in it?

Again, is there any danger in the operation of either kind of engine? A letter from a builder of small launches says of the carbureter system: "It is not suitable for anything but short runs, and it is also more dangerous than the vaporizer system, as it is impossible to get an explosive mixture in the tank as long as there is any gasoline in it." I have supposed that the carbureter system was the safest kind of a gasoline engine. M. H. R.

Springfield, Mass., Oct. 3, 1900.

(Our correspondent's queries were referred to Mr. Roberts, who replies as follows.—Ed.)

It is quite within the bounds of practicability to use both the vaporizer and the carbureter systems in combination. It would also be found of value, perhaps, as a safeguard in case one or the other got out of order. For instance, if dirt accidentally got into the tank, it would be found quite convenient to have a carbureter to fall back upon, as the device is not so likely to get clogged with foreign matter. In such a case, the writer would prefer to use the vaporizer under ordinary conditions and employ the carbureter only in cases of emergency.

The use of the hot water jacket for heating the carbureter is a very good plan, and all that is necessary is to run the outlet pipe through the liquid, possibly in the form of a coil. This arrangement is not at all dangerous. The saving of fuel by such a plan would be slight, although some method of heating the carbureter is necessary in cold weather.

The only danger with a carbureter is the formation of an explosive mixture of vapor and air in confinement. As the excess of vapor in the mixture is usually too great to give it explosive properties, the danger from this source is only on occasions when an explosive mixture is present. Explosions have occurred in a carbureter, but they are of very rare occurence, and if the carbureter openings are properly protected by wire gauze, there will be no danger of an explosion.

E. W. ROBERTS.

Automobilist's Coat.

In order to secure comfort in all kinds of weather and not be burdened with an unnecessary number of changes of clothing, automobilists find that a leather coat of the style illustrated herewith the most suitable. It is the proper thing abroad, and is well adapted to one's needs in America. It is good for rain, wind or whatever kind of weather one may encounter. When made of black leather of good quality can be kept in good appearance with little trouble.

A leather cap and trousers of the same color may be had to conplete the suit, and when the automobilist is so clothed he is prepared for anything in the shape of weather.

Oil or other dirt has no effect on such garments, and the wearers appearance is always presentable, unless he has been too careless in the use of the oil can.

The style shown in Fig. 1 is tighter fitting than Fig. 2, and although neater looking is not as good from a hygienic point of view. The more open coat, as illustrated in Fig. 2, when worn on the swiftly moving automobile gives a circulation of air between it and the body. The warm, moisture-laden air that would fill the under garments, is thus replaced by dry.

FIG. 1.—AUTOMOBILIST'S COAT.

FIG. 2.

The Holly Motor Bicycle.

We show an illustration of the bicycle made by the Holley Motor Co., Bradford, Pa. An outline sketch showing the arrangement of the motive power was published in THE AUTOMOBILE of last August. The essential feature of it is that the motor cylinder is hung on one side of the crank hanger, and the flywheel on the other, the crank shaft passing through the hanger.

THE HOLLY MOTOR BICYCLE.

Gleason-Peters Emergency Pump.

The Gleason-Peters Air Pump Co., New York, recently brought out the emergency water pump shown in the engraving. The pump works by hand and is designed for pumping an additional supply of water into the steam boiler of an automobile when under pressure, thus doing away with the necessity of waiting for steam to go down before filling. The internal parts are made of brass to prevent rusting and has a double solid plunger piston suitable for water and large intake and outlet valves with rubber tubing on each connection, one to suck water in the pump and one to discharge water into boiler. The pump is particularly useful in hill climbing.

GLEASON-PETERS EMERGENCY PUMP.

Influence of Roads and Weather on Traction.

According to tests made by E. Wythe-Smith, and communicated to the Institute of Electrical Engineers, the pull required per ton of vehicle for various roads, and for three different conditions of weather is given in the following table:

	Pull in lbs. per ton.		
Asphalt	22	23	22
Wood	22	31	36
Macadam (good)	52	50	49
Macadam	60	51	50
Macadam (soft)	97	51	52

Notes.

The Maryland Automobile Manufacturing Co. is a new concern, which is building a factory in Piedmont, W. Va. One building is complete, and work is going forward on delivery vans and other machines, for which the company reports numerous orders.

It is announced that Mr. F. B. Driscoll, assistant superintendent of mails, New York, has made a report on the tests of the use of a locomobile in collecting mail from the street boxes. The report shows that tests were made at times when the streets were most crowded and that an average saving in time of 15 minutes per trip was effected.

The diary of the Automobile Club of Great Britain and Ireland contains the following scheduled events: September 20, Grand London Pageant; Oct. 5-10, Autumn Tour; Oct. 31, 1,000-Mile Trial Prize Dinner; Nov. 1, Quarterly 100-Mile Trials and Hill Climbing Trials; Nov. 5-7, Electrically Propelled Vehicle Trials; Nov. 10-12, Tour to Sea Coast in Connection with Anniversary; Nov. 14, Annual Dinner, Hotel Metropole.

It has been proposed to operate three lines of electric omnibuses on the streets of Chicago. The first electric vehicles will probably be in operation by October. They will be double-decked and have a seating capacity of forty passengers. It is proposed to take on passengers at any corner along the route until the seats are all filled, after which the vehicles will become expresses, and will make no more stops until the down-town district is reached.

Madison Square Garden Exhibition.

The automobile exhibition to be given at the Madison Square Garden, New York, November 3d to 10th, under the auspices of the Automobile Club of America, is attracting much attention everywhere. Preparations are going forward as fast as possible and there is every prospect of its being a great success.

Exhibition Notes of the Inter-Ocean Show.

The U. S. Ball-Bearing Co., New York, showed sample of its bearings.

The Empire Motor Works, Buffalo, N. Y., exhibited a sample of its transmission gear.

The Porter Battery Co., Chicago, exhibited samples of its automobile storage batteries.

The Baldwin Cycle Chain Co., Worcester, Mass., had on exhibition samples of its detachable chain.

The Canda Manufacturing Co., New York, had on exhibition a sample of their auto-quadricycle.

The General Electric Co., Schenectady, N. Y., had on exhibition a sample of the Lemp steering check.

The Waltham Mfg. Co., Waltham, Mass., was represented by Mr. Albert Champion, who rode an Orient tricycle.

Wm. P. Miller's Sons, Brooklyn, N. Y., exhibited samples of its lubricant for automobile ball-bearings and chains.

The Olds Motor Works, Detroit, exhibited an electric stanhope. Messrs. R. E. Olds and M. F. Loomis were in attendance.

The Dayton Electrical Mfg. Co., Dayton, O., showed a sample of the "Apple" gas engine igniter. Mr. V. G. Apple was in attendance.

The Ohio Automobile Co., Warren, O., had on exhibition two of its latest type of carriages. Messrs. Packard and Weiss were in attendance.

The St. Louis Motor Carriage Co. exhibited two gasoline vehicles driven overland from St. Louis to Chicago. Messrs. J. L. and H. E. French were in attendance.

The Motsinger Device Mfg. Co., Pendleton, Ind., exhibited its gas engine sparking device known as the "Auto-Sparker." Messrs. R. H. Motsinger and R. A. Morris were present.

The Wagner Electric Mfg. Co., St. Louis, made an interesting exhibit of an automobile charging set in operation. Mr. Geo. B. Foster, the Chicago manager of the company, was present.

The Mobile Co. of America showed a number of its steam carriages. The exhibit was in charge of Mr. J. Randolph Walker. One of the vehicles shown carried off the prize in climbing a 42 per cent grade.

The Eastman Automobile Co., Cleveland, showed a complete steam carriage and three of its pressed steel bodies, of which it makes a specialty. Messrs. H. F. Eastman and H. J. Hayes were present.

The Milwaukee Automobile Co. showed one of its steam vehicles. Mr. F. P. Illsley, Chicago agent of the company, was in attendance. Mr. G. H. Dousman, secretary of the company, was also in attendance.

The Locomobile Co. of America, New York, showed four runabouts, one surrey, two stanhopes, and two racing machines. Messrs. A. W. Robinson, T. E. Griffin, H. C. Eisselstyn and C. H. Tucker were in attendance.

The Chicago Motor Vehicle Co., Chicago, made an interesting exhibit consisting of two breaks, a trap, stanhope, and two delivery wagons. Messrs. W. O. Worth, J. E. Keith, H. W. Kellogg, W. R. Donaldson, and J. A. Lindville were in attendance.

The Winton Motor Carriage Co., Cleveland, exhibited four of its vehicles: phaeton, surrey, semi-racer, and racer, the latter being the machine used by Alexander Winton in all his races. Messrs. Alexander Winton and C. B. Shanks were in attendance.

The De Dion-Bouton Motorette Co., Brooklyn, exhibited a two-seated gasoline motorette and a gasoline tricycle. Mr. C. G. Ridgeway had charge of the exhibit, assisted by Mr. G. S. Geiston. Mr. Kenneth A. Skinner, who rode a De Dion tricycle, was also present.

The Hewitt-Lindstrom Motor Co., Chicago, exhibited a line of electric vehicles, comprising an omnibus, delivery wagon, break, stanhope, and runabout. Ten first and several second prizes were awarded the company for its various vehicles. Messrs. John Hewitt and C. A. Lindstrom were in attendance, assisted by F. E. Rich, J. B. Conrad, H. Underwood, and N. Vance.

The Woods Motor Vehicle Co., Chicago, had one of the most elaborate displays of vehicles at the show. In the exhibit were the following: Stanhope with rumble seat, which took first prize; landau extension; brougham single; brougham victoria No. 2; brougham cab; depot wagon, doctor's coupe; hansom cab; spider with rumble seat; doctor's stanhope; road wagon with top; runabout; U. S. pick-up wagon; U. S. mail delivery; vestibule delivery (Marshall Field design); ten passenger wagonette; Pabst's Brewery special delivery wagon; break, park trap, mail phaeton. The exhibit was in charge of Messrs. Bruce Clark and G. H. Petri.

The American Bicycle Co. exhibited its various types of electric vehicles made at the Waverley factory and included a runabout, stanhope, runabout with top, break, combination delivery wagon, dos-a-dos, road wagon, and road wagon with top. The electric vehicles formed the main part of the exhibit, but the gasoline motor tricycle made at the Cleveland factory of the company, and the gasoline "Trimoto," made by the Crescent Works, together with a Rambler gasoline runabout, made by the Gormuly & Jeffery Sales Department, were also shown. The exhibit was in charge of Mr. J. S. Conwell, the sales manager of the Waverley factory. Messrs. J. E. Bromley, T. C. Marcellus, W. L. Githens, G. A. Duncan, J. E. Roach, Fred. Patte, H. B. Varney, G. W. Hett, J. F. Gunther, and C. T. Jeffery were in attendance.

SPECIAL NOTICES.

Cards "Wanted" and "For Sale," inserted under this heading at two cents per word agate measure. Minimum price, fifty cents.

FOR SALE—Winter Special 1900; in perfect condition; only used about fifteen days; good reason for selling. Dr. A. C. Christian, Irvington, N. J.

N. Y. CITY POWER FACTORY, mile long R. R. dock; lease, $1,500 yearly; mechanics' apartments $5 monthly. Address "Capitalist," care The Automobile, 150 Nassau St., New York.

WANTED.—Second-hand Automobile to seat four; gasoline or steam; must be in good order and all right. "H. P. E.," care THE AUTOMOBILE, 150 Nassau St., New York.

WANTED position as foreman by man experienced in building electric automobiles, New York. Address MACHINIST, care of The Automobile, New York.

THREE BARGAINS—1 New Duryea Phaeton, $1,400; 1 Winton Phaeton, '99 Model, $750; 1 Duryea Light Delivery wagon, little used, $750. Trials given. Henry Crowther, 20 Broad Street, New York City.

There may be other self-propelled vehicles which meet your demand for an ideal automobile, but we would like the privilege of writing you how and why this particular one gives all pleasure and no annoyance—before you make a purchase.

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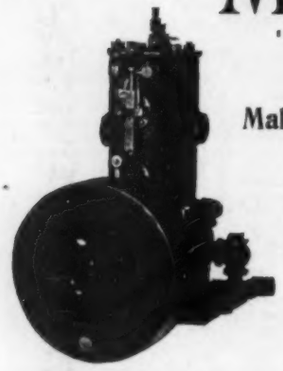

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E. R. Thomas Motor Co. **105 Broadway, Buffalo, N. Y.**

Automobile Show at the Grand Central Palace.

Mr. Marcus Nathan, general manager of the Automobile Show to be held at the Grand Central Palace, New York, November 14th to 24th, announces that applications for space are coming in in a very satisfactory manner and the prospects are favorable for a most successful show. The exhibitors are among the leading ones in the automobile industry. The special claim is made that the Automobile Show occurs at the same time of the Horse Show, and for that reason will attract those who attend the latter and will include among those visitors from out of town.

JUMP SPARK COIL

the BEST gas engine igniter. Acknowledged to be the most up-to-date method.

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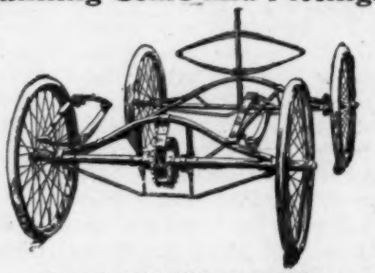

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for testing primary batteries. Indispensible for ascertaining the condition of batteries.

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Trade News.

Incorporations are reported of Pacific Automobile Co., at Los Angeles, Cal.; Owen Motor Carriage Co., Cleveland, O.

A. L. Adams, Wilsonville, Conn., announces that he is about to move to Worcester, Mass., in order to have better facilities for supplying his customers.

The Hewitt-Lindstrom Motor Co., Chicago, recently brought out a new catalogue descriptive of its line of electric vehicles. It is printed on good paper and contains handsome illustrations of the company's products.

The Single Tube Automobile & Bicycle Tire Company, of Bellville, N. J., has brought suit against the Goodyear Tire Rubber Company, of Akron, for alleged infringement of the agreement covering the sale of tires made under the Tillinghast patent.

The Winton Motor Carriage Co., Cleveland, O., is just out with a very handsome catalogue, in which is described and illustrated the various styles and types of its gasoline vehicles. It is printed in colors. Among other things it contains useful information for users in the operation of gasoline carriages.

The Westchester Bicycle & Automobile Co., 153 Fulton St., New York City, announces that it will operate repair stations throughout Westchester County. It contemplates establishing a shop for the purpose of carrying a full line of repairs for the Mobile and Locomobile, and also an electric charging station for electric vehicles. New and second-hand carriages will be dealt in.

"Graphite for Automobiles" is the title of a little pamphlet just issued by the Joseph Dixon Crucible Co., Jersey City, N. J. Within its pages is given an answer to the question of "What is graphite?" also information on the automobile. Attention is called to the advantages of Dixon's waterproof graphite grease, graphite lubricant, and other graphite specialties adapted for automobile service.

The following prizes were won by the "Locomobile" in the competition at Washington Park, Chicago, in the Inter-Ocean race meet: First and second prizes, one mile race for steam carriages; first prize, obstacle test; first and second prizes, one-mile race, free for all; first price, ten-mile race for four-passenger vehicles; first prize, five-mile race for two-passenger vehicles; first and second prizes, one-mile race backward; first prize, ten-mile race for steam carriages; silver cup, exhibition mile against World's record. The "Locomobile" received five medals and four cups.

The Southwestern Automobile Car Transportation Company, St. Louis, is out with a prospectus under date of July 1st. The company is in process of organization, its proposed business being to supply transportation along already established lines of wagon traffic of the United States Postal Star routes. The field of operation is to be in the states of Missouri, Kansas, Oklahoma, Texas, Colorado and New Mexico, where railway transportation is inadequate, and to form a medium of traffic between the smaller towns and villages not reached by railways.

The Stearns Automobile Company, with a capital of $1,000,000, has taken over the American and Canadian rights of the patents controlled by the Anglo-American Rapid Vehicle Co., and will enter extensively into the manufacture of gasoline vehicles. It has leased the plant in Syracuse, N. Y., formerly occupied by the Barnes Cycle Co. E. C. Stearns, formerly of the Stearns Bicycle Co., is President, and W. W. Gibbs of Philadelphia, formerly of the Chloride Storage Battery Co., and identified with the Pennsylvania Electric Vehicle Co. and the Anglo-American Rapid Vehicle Co., is Vice-President.

The Remington Automobile & Motor Co., Ilion, N. Y., has purchased the right, title and interest of the Quick Mfg. Co., well-known makers of gasoline motors for vehicles, located at Newark, N. J. It is announced that the plant at Newark will be continued in addition to the manufactory at Ilion until the orders at the Newark factory can be completed, after which time the machinery, fixtures, etc., will be removed to Ilion. The Quick motor, which is well and favorably known, is to be further improved and will be marketed under the Remington name. The motors will be built for the trade of 3, 4, 6 and 8 horse power. Carbureters and mufflers will also be manufactured for the trade by the Remington company.

The De Dion-Bouton Motorette Co., Brooklyn, N. Y., is in receipt of word from England and France in regard to the official records of the De Dion motors and motorettes or voiturettes with De Dion motors in the 1,000-mile race at the Paris Exposition. Gold medals and first and second prizes were awarded in all classes and for tricycles and quadricycles a special award was given for their use in military purposes. The prizes were awarded both to the motors and voiturettes manufactured by De Dion-Bouton Co., but also to the voiturettes manufactured by other parties and operated by the De Dion motors. In the recent races at Newport the De Dion motors furnished by the De Dion-Bouton Motorette Co., demonstrated that reliability for track work or for pleasure purposes.

The qualities which have made HARTFORD bicycle tires so popular are incorporated in

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The combination of good rubber, fine fabric and skilled workmanship, which enters into the making of Hartford Single Tube Carriage Tires has made them

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They are the embodiment of careful study and of long experience, and can be depended upon like a faithful friend.

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They come from Boston, they come from Philadelphia, they come from Albany, Rochester, Buffalo, Chicago—from dozens of rich cities within a day of New York .. ..

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YOU CAN REACH ALL OF THEM IF YOU EXHIBIT AT THE

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To enlist capital for the development of inventions.

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Conditions found in Steam and Gasoline Carriages
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High temperature in cylinders

They need
An Oil of high fire test
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For Steam, Gasolene or Electric Motor Vehicles

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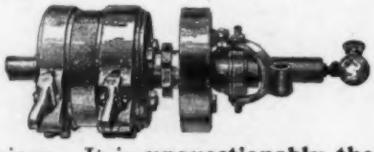
The **Upton Transmission Gear** has advantages which no other possesses.
It is Compact, Neat and Strong.
It is Absolutely Dust Proof.
It has two speeds and a reverse.
Its speed ratio may be arranged at will.
It has an Automatic Oiling Device.
It may be readily adapted to any motor carriage. It is **unquestionably the most perfect gear in existence.**



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Patents.

List of Automobile patents granted during month of September.

657,381—Automobile. Issued to W. O. Barnes.
657,124—Automobile vehicle. Issued to H. W. Libbey.
657,281—Vehicle driving mechanism. Issued to W Buttler.
657,260—Vehicle, self-propelled. Issued to H. Wilcke.
657,650—Automobile vehicle. Issued to L. H. Dyer.
657,684—Carriage cooling apparatus, motor. Issued to A. E. Vorreiter.
657,526—Chain, drive. Issued to C. E. Duryea.
657,516, 657,899—Vehicle, motor. Issued to C. J. Coleman.
657,711—Vehicle, motor. Issued to F. E. & F. O. Stanley.
658,017—Chain, drive. Issued to C. W. Levalley.
658,238—Vehicle, motor. Issued to C. J. Coleman.
658,068—Vehicle, motor. Issued to H. J. Lawson.
658,046—Vehicle, motor. Issued to C. T. Shoup.
658,249—Vehicle wheel, motor. Issued to C. G. Ensign.
658,117—Vehicles, automatic maximum speed governor for electrically propelled. Issued to H. P. Parshall.

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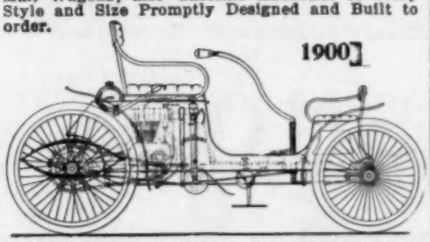

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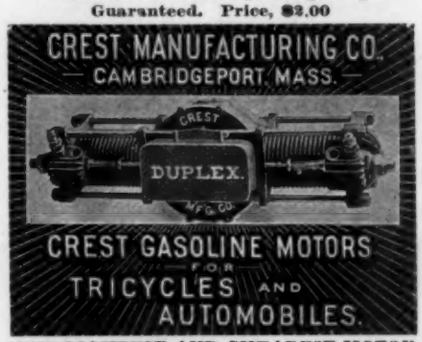

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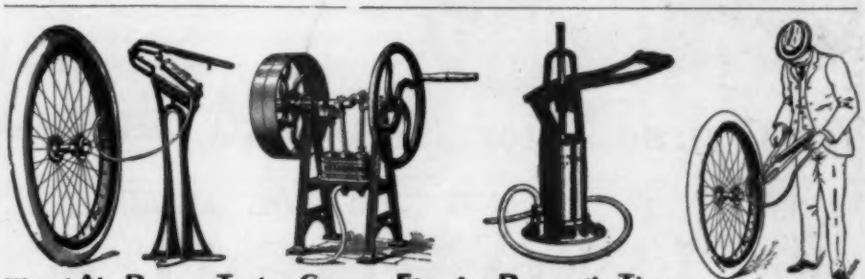

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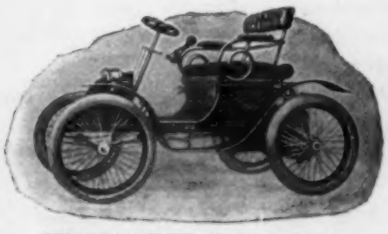

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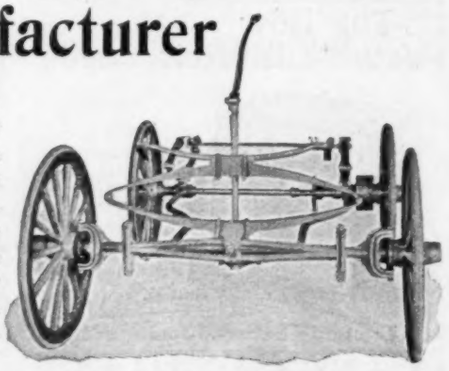

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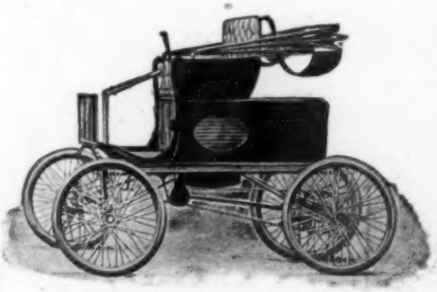

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